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09/986,311	11/08/2001	Masajirou Inoue	106145-00029	5180

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ARENT FOX KINTNER PLOTKIN & KAHN
1050 CONNECTICUT AVENUE, N.W.
SUITE 400
WASHINGTON, DC 20036

EXAMINER	
MERCADO, JULIAN A	

ART UNIT	PAPER NUMBER
1745	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/986,311	Applicant(s) INOUE ET AL.	
	Examiner Julian Mercado	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) 9 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 6 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-8, drawn to a first combination, classified in class 429, subclass 34.

II. Claim 9, drawn to a second combination, classified in class 29, subclass 623.2.

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as sealing a membrane electrode assembly in the event of an abnormality in the original seal. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Bob Carpenter on January 13, 2004, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claim 9 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on December 6, 2000. It is noted, however, that applicant has not filed a certified copy of the 2000-175054 application as required by 35 U.S.C. 119(b).

Claim Objections

Claim 1 is objected to because of the following informalities:

In claim 1 at line 4, it is suggested to change "said" to --of said--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, and 5 are rejected under 35 U.S.C. 102(a) as being anticipated by JP 2000-109792 as evidenced by Hawley's Condensed Chemical Dictionary, 14th Ed.

At the outset, it is noted that the preamble recitation of polymer electrolyte membrane fuel cell having separators and a membrane electrode assembly laminated was not given the

effect of a limitation in the claim. The preamble appears to be only directed to the purpose or intended use of the liquid thermosetting sealing agent, and the additional components of the claim(s) can stand alone without depending on the preamble for completeness.

Regarding independent claim 1, JP 2000-109792 (hereinafter JP '792) teaches a thermosetting sealing agent having a viscosity of 100-20,000 poise, equivalent to 10-2000 Pa.S. (Abstract) Because it is a vulcanized rubber, the sealing agent is of the thermosetting type; as evidence, Hawley's Condensed Chemical Dictionary is cited to specifically characterize vulcanized rubber as a thermoset[ting material], "a strong, temperature-stable thermoset having unique elastic modulus and yield properties". The claimed viscosity of 1,000 to 9,000 Pa.S. is taught by JP '792 to the extent that 10-2000 Pa.S. overlaps therewith. The thermosetting sealing agent, being a fluororubber, is based on a fluorine series elastomer. (Machine translation, par. [0007], applies to dependent claim 5)

Regarding dependent claim 2, the claimed 100 to 130 °C is deemed taught by JP '792 to the extent that the disclosed temperature of curing of about 100-200 °C overlaps therewith. (Abstract) As to controlling the temperature range thereof within ± 5 °C, as JP '792 discloses absolute endpoint values for its temperature ranges, the temperature is deemed controlled at those disclosed temperatures, i.e. with no measurable deviation therefrom.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 2000-109792 as applied to claims 1, 2 and 5 above.

The teachings of JP '792 are discussed above.

Regarding dependent claim 4, as to the hardness of the thermosetting sealing agent, insofar as the thermosetting sealing agent disclosed in JP '792 possesses the claimed viscosity of 1,000 to 9,000 Pa.S as well as the same temperature for curing, it is reasonably presumed, *prima facie*, to inherently have the same hardness level as claimed after the curing step, absent of a showing by applicant that the claimed invention distinguishes over the reference. *In re* Best, 195 USPQ at 433, footnote 4 (CCPA 1977) and *In re Spada*, 15 USPQ 2d 1655 (Fed. Cir. 1990)

The examiner notes that the industry standard claimed, i.e. JIS K 6253, is deemed to give breadth and scope to the claims solely to the extent that it establishes the method in which the claimed hardness is obtained.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-109792 as applied to claims 1, 2, 4 and 5 above.

The teachings of JP '792 are discussed above.

With respect to dependent claim 3, the skilled artisan would find obvious to arrive at the temperature of curing of 120 °C ± 5 °C, as JP '792 discloses a corresponding temporal factor in determining the temperature of heating needed, e.g. heating for 2 minutes would naturally require a temperature of heating approaching the upper temperature limit of 200 °C, while heating for 20 minutes would entail a temperature closer to the bottom range of 100 °C. Thus,

absent of unexpected results the skilled artisan would employ a temperature of curing of 120 °C ± 5 °C without undue experimentation. JP '792, in fact, discloses that the skilled artisan would find obvious to employ additional heating at a higher temperature range of 150-200 °C "if needed", thus, JP '792 is considered to provide motivation for the skilled artisan to focus on temperature ranges suitable for adequate shaping of the thermosetting sealing agent and to explore temperature levels (along with duration in treatment times) within the disclosed range.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steck et al. (U.S. Pat. 5,464,700) in view of JP 2000-109792 as applied to claims 1, 2, 4 and 5 above.

The teachings of Steck et al. and JP '792 are discussed above.

Regarding independent claim 6, Steck et al. teaches a fuel cell having separators [22, 24] and a membrane electrode assembly [30] in which the gaps between the separator and the membrane electrode assembly are tightly sealed with a seal, "[t]he portions 12c, 14c of the gasketing material layers 12, 14 overlapping the electrodes 18, 20 are now compressed between the respective electrodes 18, 20 and the respective separator plates 22, 24". (Figure 4, col. 6 line 3-8, see also col. 5 line 64 et seq.) The gaps between the separator and the membrane electrode assembly are deemed tightly sealed to the extent that the gasketing material is resultantly compressed. (see also col. 5 line 27-33)

Steck et al. does not explicitly teach a liquid thermosetting sealing agent as claimed in claim 1. However, as discussed above JP '792 teaches the claimed liquid thermosetting sealing agent. The skilled artisan would find obvious to employ the liquid thermosetting sealing agent of

JP '792 in Steck et al.'s invention for reasons such as employing a gasket which minimizes contamination and has a high thermal resistance, *inter alia.* (see JP '792, par. [0010])

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steck et al. (U.S. Pat. 5,464,700) in view of JP 2000-109792 as applied to claim 6 above, and further in view of Krasij et al. (U.S. Pat. 5,110,691).

The teachings of Steck et al. and JP '792 are discussed above.

As to dependent claim 8, a plurality of single cell fuel cells collectively makes up a solid polymer fuel cell (SPFC) stack. (col. 1 line 25)

As to independent claim 7, Steck et al. does not explicitly teach an application rate preset depending on the viscosity, width and height of the resulting seal. However, with respect to the width and height of the resulting seal, JP '792 teaches that the thickness of the seal is predetermined and largely governed by the specific method of forming. (par. [0008], "Let the thickness be the thing of the thickness according to these forming methods" has been further orally translated for clarification), thus, based on the premise that the dimensions of the formed seal is fixed at the outset, the skilled artisan would find obvious to employ a preset application rate so that the final width and height of the seal is sufficiently formed within the disclosed "grade heating" of 2 – 20 minutes. With respect to the viscosity, absent of unexpected results it is asserted that this is an optimizable parameter for a result-effective variable. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980) For example, Krasj et al. teaches that the viscosity of a seal affects the consistency thereof which determines the formation of an extruded bead or air tightness of the formed seal. (col. 3 line 53-66)

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. 5,523,175 to Beal et al. is cited to teach fluoroelastomer seals for fuel cells.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

jam

Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700